BTEC Assignment Brief

Qualification	Pearson BTEC International Level 3 Foundation Diploma in Engineering Pearson BTEC International Level 3 Diploma in Engineering Pearson BTEC International Level 3 Diploma in Electrical/Electronic Engineering Pearson BTEC International Level 3 Diploma in Digital Engineering Pearson BTEC International Level 3 Diploma in Manufacturing Engineering Pearson BTEC International Level 3 Extended Diploma in Engineering Pearson BTEC International Level 3 Extended Diploma in Electrical/Electronic Engineering Pearson BTEC International Level 3 Extended Diploma in Digital Engineering Pearson BTEC International Level 3 Extended Diploma in Manufacturing Engineering
Unit number and title	**Unit 22: Electronic Printed Circuit Board Design and Manufacture**
Learning aim(s)	**B:** Explore how computer software is used for schematic capture and simulation of an electronic circuit
Assignment title	Schematic capture and simulation of electronic circuits
Assessor	
Issue date	
Hand in deadline	

Vocational Scenario or Context	Your supervisor is happy with your work to date, and has decided that you should progress to exploring the software package used by your company to generate schematic diagrams and layouts. Your supervisor would like you to create schematic diagrams and carry out simulation of the circuit operation in the schematic capture and simulation software package. You will be provided with hand-drawn circuit diagrams. Your supervisor has asked you to produce evidence that you can use the software package effectively.

Task 1	You have been asked to capture given DC and AC circuit(s) and simulate the circuits to confirm their operation and with the simulation data justify the correct functionality of the circuit(s) and produce specification data. **To do this:** Your tutor will provide you with hand drawn circuit schematics for DC and AC circuit(s). You need to a) capture the circuits electronically; and b) confirm the operation of the circuit using simulations. You need to: • Use an industry national or international standard electronics software design package to capture the schematic for the given circuit (s). Your circuit

	schematic(s) should: o provide full details of components o be neat and accurate, and show network connections. o be drawn to a recognised drawing standard, such as BS8888 or ISO128. • Use electronics software design package to simulate the given circuit(s). You should use your simulation to: o confirm the desired operation of the circuit(s); o extract measurements and data to carry out a DC analysis; o complete an AC analysis using information about input and output signals; and **You should then:** Collate your schematic diagrams, printouts from simulations, tables of electrical values at key points and other relevant data gathered to produce a technical specification for each circuit.
Checklist of evidence required	Evidence of computer-based activities capturing and simulating DC and AC circuits, or a complex circuit containing DC and AC elements; witness statements accompanied by annotated screen shots, printouts and data generated.

Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria you must show that you are able to:
22/B.D2	Capture, following industry conventions, a direct current and alternating current circuit(s) schematic and use simulation data to create a technical specification for the circuit(s)
22/B.M2	Capture accurately and efficiently a direct current and alternating current circuit(s) schematic and simulate the correct operation including the generation of representative circuit(s) data.
22/B.P4	Capture a direct current and alternating current circuit(s) schematic and simulate the correct operation of the direct current circuit.

Sources of information to support you with this Assignment	Books Introduction to Multisim for electrical circuits; Nilsson, Pearson 2014 (1993); ISBN-13: 978-0830639519 SPICE for Circuits and Electronics Using PSPICE; Rashid, Rashid; (Prentice Hall 1995); ISBN-13: 978-0131246522 Websites ni.com/tutorial/11996/en/ softpedia.com/get/Science-CAD/Circuit-Wizard-Professional.shtml cadsoft.io/ Further useful resources may be found at qualifications.pearson.com/en/support/published-resources.html#step1
Other assessment materials attached to this Assignment Brief	Hand-drawn schematic diagrams for a dc and an ac (or a hybrid ac/dc) circuit with a minimum of 5 and a maximum of 15 components.